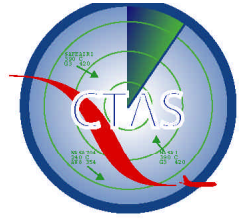


EDP

Expedite Departure Path



Purpose:

Assist terminal area controllers in efficiently directing airborne departure traffic by providing speed, direct climb, and where appropriate, heading advisories.

Primary Users:

Terminal area departure controllers

Secondary Users:

- Terminal area traffic management coordinators (TMCs)
- Departure Planning Tools
- En route radar controllers

Benefits:

Initial benefits studies have estimated annual savings in excess of US\$80 million for national deployment.

Status:

- EDP is being developed at NASA Ames Research Center.
- Simulations with active controllers are underway to gain controller insight into functional and interface design.

Future:

EDP will undergo extensive laboratory simulation to verify algorithmic robustness and to optimize the controller interface.



Overview

Air traffic control specialists at Terminal Radar Approach Control (TRACON) facilities are required to manage increasingly complex traffic flows arriving and departing busy airports. Decision support tools have been developed to assist arrival controllers and traffic management coordinators (TMCs) with the arrival process (for example, the Final Approach Spacing Tool [FAST] and the Traffic Management Advisor [TMA]). Expedite Departure Path (EDP) is a decision support tool which provides TRACON controllers with advisories to assist in managing airborne departure operations.

EDP will provide controllers with timely climb, speed and heading advisories via the controller display. Controllers will employ these advisories to efficiently merge aircraft into the en route stream, and in some cases, allow expedited climb trajectories. By using CTAS' accurate trajectory prediction capabilities, EDP will assist controllers by calculating highly efficient departure trajectories and departure fix spacing closely matched to that specified by the TMC. The high fidelity trajectory modeling utilized by EDP can further assist departure planning tools by providing accurate time-to-fly predictions for pending departures.

Departure Fix Sequencing and Merging

In many TRACONs, multiple airports depart through common departure fixes. EDP will assist controllers by providing speed and, where appropriate, heading advisories to allow an efficient merge prior to crossing the departure fix. Furthermore, EDP will optimize the sequence of merging aircraft to achieve a balance of efficiency and low controller workload. The result of this process is aircraft spacing over the departure fix that closely matches the restrictions specified by the TMC.

Unrestricted Climb Trajectories

Terminal area congestion resulting from hub-and-spoke operations has led to extremely complicated TRACON airspace requirements. TRACON procedures often separate entire streams of aircraft in an effort to maintain controller situational awareness. For example, by partitioning the TRACON into departure and arrival airspace, departure and arrival operations are treated independently. Unfortunately, this is sometimes accomplished at the expense of efficiency (e.g., restricted altitude departures). This tradeoff between efficiency and situational awareness is recognized and has been addressed at some facilities via prearranged coordination areas. Given its accurate trajectory prediction capabilities for both departures and arrivals, EDP will advise the controller when a direct climb clearance is appropriate for departure aircraft. Furthermore, EDP will also alert the controller if a direct climb requires the use of a coordination area. By automatically evaluating all departures for direct climb clearances, EDP will allow the controller to focus on the primary task of separation, while allowing more efficient climb trajectories when warranted.

Transoceanic Departure Fix Spacing

Due to the high demand and excess spacing requirements of transoceanic flights, inefficiency of spacing over an oceanic fix directly translates to delay throughout the remainder of the day. EDP will be ideally suited for achieving efficient spacing of transoceanic departures.